

Message

From: Davis, Eva [Davis.Eva@epa.gov]
Sent: 10/21/2019 7:30:33 PM
To: Jennings, Eleanor [Eleanor.Jennings@parsons.com]; Steven Willis [steve@uxopro.com]; D'Almeida, Carolyn [dAlmeida.Carolyn@epa.gov]; 'Brasaemle, Karla' [KBrasaemle@TechLawInc.com]; Wayne Miller [miller.wayne@azdeq.gov]
CC: Dan Pope [DPope@css-inc.com]
Subject: RE: Performance Based Remediation - Document Exchange: Regulatory ST012 (USEPA - ADEQ) Entry: Preliminary ST012 BART Test Summary

It occurred to me during last week's call that maybe we should have been discussing these results with them??

From: Jennings, Eleanor <Eleanor.Jennings@parsons.com>
Sent: Friday, September 27, 2019 3:29 PM
To: Davis, Eva <Davis.Eva@epa.gov>; Steven Willis <steve@uxopro.com>; D'Almeida, Carolyn <dAlmeida.Carolyn@epa.gov>; 'Brasaemle, Karla' <KBrasaemle@TechLawInc.com>; Wayne Miller <miller.wayne@azdeq.gov>
Cc: Dan Pope <DPope@css-inc.com>
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Sensitive / Proprietary

Hello again, Team!

Eva – as a National Chair for the American Society for Microbiology, I invite you to become a member! You did a great job evaluating the data!

A few more thoughts on my end:

- When present, SRB population sizes are approximated at 10^4 , with one exception (LSZ 38, which had a single measurement of 10^5 . You really want to see 10^6 at the bare minimum, but closer to 10^7 to 10^8 for true enhanced bioremediation from amendments.
- At the 6/28/18 BCT call, data presented included that for quantitative molecular qPCR results for SRBs. This data reported counts ranging from ND (in three of the six tested MWs) to 10^4 - 10^6 for the remaining three wells that had detectable population sizes. Although the MWs tested for this quantitative analyses are different from those currently being monitored by the SRB-BART test, I would like to see population estimates higher than this apparent background population size. If sulfate is stimulating the SRB community, the population should grow in size.
- I would like to see more data points for the SRB-BART tests, for any given MW. Once they shut off an extraction well, I would like to see more than one data point. I would really like to see data month after month, to confirm the test results and to see if the approximated population sizes are being maintained. Better yet, these population sizes should increase over time as sulfate is consumed along with the benzene, in theory.
- The SRB-BART tests are a good, "back of the truck" monitoring method, but absolute confirmation of sulfate-reduction stimulating benzene biodegradation will come when the isotopically-labeled benzene-baited BioTrap in-situ sampler tests are run.

Happy Friday, everyone, and have a great weekend!
Eleanor

Eleanor M. Jennings, M.S., PhD
Project Principal Scientist - Environmental Microbiology and Biogeochemistry

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202.302.9996

"Safety Isn't Expensive. It's Priceless."

From: Davis, Eva <Davis.Eva@epa.gov>

Sent: Friday, September 27, 2019 10:41 AM

To: Steven Willis <steve@uxopro.com>; D'Almeida, Carolyn <dAlmeida.Carolyn@epa.gov>; 'Brasaemle, Karla' <KBrasaemle@TechLawInc.com>; Wayne Miller <miller.wayne@azdeq.gov>

Cc: Dan Pope <DPope@css-inc.com>; Jennings, Eleanor <Eleanor.Jennings@parsons.com>

Subject: [EXTERNAL] RE: Performance Based Remediation - Document Exchange: Regulatory ST012 (USEPA - ADEQ) Entry: Preliminary ST012 BART Test Summary

So I'm going to pretend I'm an amateur microbiologist and take a stab at interpreting this data:

For UWBZ26, no sign of BTEX degradation going on, and only a small number of sulfate reducing bacteria (SRB) found by the BART test.

UWBZ27 (since there is no UWBZ227, I assume they mean UWBZ27) – 76% or so of the SRB were killed off between 4/29/2019 and 6/17/2019, however, looking at the ratios of B to TEXN, and comparing them to the ratios seen in UWBZ26, there may be some TEXN degradation going on. B does not appear to be degrading (at least at this time).

LSZ23 – no SRB, but again the ratios may indicate TEXN degradation. If there is TEXN degradation going on in this area, it's not by SRB.

LSZ38 – better population of SRB, but still does not meet 'robust' criteria of 10E6+. B:TEXN ratios may indicate TEXN degradation, but not clear that B concentration is decreasing significantly. Lab data not available to determine if sulfate is being consumed.

LSZ39 – SRB population grew by more than an order of magnitude, sulfate may be being used, T concentration changes may show that it is being degraded.

How did I do?

From: Steven Willis <steve@uxopro.com>

Sent: Thursday, September 26, 2019 4:45 PM

To: D'Almeida, Carolyn <dAlmeida.Carolyn@epa.gov>; Davis, Eva <Davis.Eva@epa.gov>; 'Brasaemle, Karla' <KBrasaemle@TechLawInc.com>; Wayne Miller <miller.wayne@azdeq.gov>

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Since this is similar to a colorimetric test, the results are semi-quantitative and somewhat subjective. I think Eleanor asked that they take photos of the BART bottles so we could have a better idea of what they look like when a determination is being made.

Steven A. Willis, RG

UXO Pro, Inc.

steve@uxopro.com

480-316-3373

From: D'Almeida, Carolyn <dAlmeida.Carolyn@epa.gov>

Sent: Thursday, September 26, 2019 1:11 PM

To: Steven Willis <steve@uxopro.com>; Davis, Eva <Davis.Eva@epa.gov>; 'Brasaemle, Karla' <KBrasaemle@TechLawInc.com>; Wayne Miller <miller.wayne@azdeq.gov>

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Thanks Steve

So, curiously the repeating SRB result of 27,000 is presumably qualitative result? How is the number derived?

Carolyn d'Almeida
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(415) 972-3150

"We can evade reality, but we cannot evade the consequences of evading reality." - Ayn Rand

From: Steven Willis <steve@uxopro.com>

Sent: Thursday, September 26, 2019 12:56 PM

To: D'Almeida, Carolyn <dAlmeida.Carolyn@epa.gov>; Davis, Eva <Davis.Eva@epa.gov>; 'Brasaemle, Karla' <KBrasaemle@TechLawInc.com>; Wayne Miller <miller.wayne@azdeq.gov>

Subject: Re: Performance Based Remediation - Document Exchange: Regulatory ST012 (USEPA - ADEQ) Entry: Preliminary ST012 BART Test Summary

Here you go

Steven A. Willis, RG

UXO Pro, Inc.

steve@uxopro.com

480-316-3373

From: D'Almeida, Carolyn <dAlmeida.Carolyn@epa.gov>

Sent: Thursday, September 26, 2019 12:54 PM

To: Davis, Eva <Davis.Eva@epa.gov>; 'Brasaemle, Karla' <KBrasaemle@TechLawInc.com>; Wayne Miller <miller.wayne@azdeq.gov>; Steven Willis <steve@uxopro.com>

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Did anyone download this? If so can you send me a copy? thanks

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"We can evade reality, but we cannot evade the consequences of evading reality." - Ayn Rand

From: sharepoint@woodplc.com <sharepoint@woodplc.com>

Sent: Tuesday, September 24, 2019 1:17 PM

To: D'Almeida, Carolyn <dAlmeida.Carolyn@epa.gov>

Subject: Performance Based Remediation - Document Exchange: Regulatory ST012 (USEPA - ADEQ) Entry: Preliminary ST012 BART Test Summary

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File Posted By: Pearson, Stuart C.

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